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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/801,877 | 03/11/2004 | Pao-Tung Shih | AMI-2711 | 2959 |

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| EXAMINER | |
|---|---|
| RADI, JOHN A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3641 | |

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/801,877 | SHIH, PAO-TUNG | |
| | Examiner | Art Unit | |
| | John A. Radi | 3641 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *11 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.



EA

## DETAILED ACTION

### *Claim Objections*

Claim 1 is objected to because of the following informalities: confusing description of the refracting mechanism of IR emitter/sensor (claim 1, line 10). Examiner suggests change [paint pellets moved down in the trajectory of said gun body to let said emitting electric eye emit a light beam] to paint pellets moved down in the trajectory of said gun body to reflect a light beam from said emitting electric eye. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 2 recites the limitation "under its pellet case base." Because all paint pellet guns do not have a pellet case base located above the barrel, there is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ellis (US 5727538), in view of Murdock et al (US 6807959) and further in view of and Heady (US 4922236).

Ellis discloses: a paint-pellet gun comprising a gun body (abstract), projectile sensors (8) located underneath the pellet case base (30), connected to a shooting control system (12) by power lines (34, 20), whereby the microprocessor will only fire the pellet when it is fully seated thereby preventing jamming in the barrel (abstract).

Ellis does not specifically disclose that the optical sensor (8) is an IR emitter/receiver combination, or associated bored holes or firing logic. Murdock teaches the use of an emitting electric eye (40), a receiving electric eye (42) and a covering plate (38), said gun body bored with two through holes (fig. 4 see where 40, 42 attach), said two through holes respectively installed therein with said emitting electric eye (40) and said receiving electric eye (42), said emitting electric eye and receiving electric eye connected with a shooting control system (col. 12, lines 28-33) by power lines (44), said covering plate (38) covered around the outer sides of said emitting electric eye and said receiving electric eye; and, in case of no paint pellets being in said trajectory, said

shooting control system unable to be induced and started to carry out shooting (col. 8, lines 45-50), said paint-pellets gun being safe in shooting and preventing paint pellets from cracking in said trajectory and causing deadlock. Murdock and Ellis use the optical sensors for the same purpose, to monitor the presence of a blockage in the barrel of the gun and controlling the firing logic to prevent firing until a pellet is seated in the barrel. Therefore, it would have been obvious to one skilled in the art at the time of invention that the IR emitter/sensor combination as taught by Murdock is the functional equivalent of the sensor as taught by Ellis and therefore the combination is *prima facie* obvious.

Furthermore, with respect to claim 1, what the Murdock/Ellis combination doesn't disclose is the installation of the sensor/emitter on the same side of the barrel. Heady (US 4922236) teaches an optical emitter/sensor system in which both components are installed on the same side of the object being detected (see figures 1 and 2). In the event that a reflecting surface is not available, the detecting array will fail to detect refracted light from the emitting source. Heady provides the motivation for such an installation being that: it requires fewer components; it automatically solves the problem of reflectively aligning light source and light sensors; and it reduces the chance for ambient light to leak into sensory fibers as optical noise (col. 3, lines 50-54). Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the Ellis/Murdock combination so that both electric emitter and sensor were located on the same side of the barrel.

Claims 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ellis (US 5727538) further in view of Murdock et al. (US 6807959).

Ellis discloses: a sensor (8) located beneath the pellet case base, a shooting control system (12) that blocks shooting of the gun when a pellet isn't completely seated in the barrel (astract).

What Ellis doesn't specifically disclose is that the optical sensor (8) is an IR emitter/receiver combination, and the associated covering plates, and installation holes.

Murdock discloses: a paint-pellet gun comprising a gun body (10), an emitting electric eye (40), a receiving electric eye (42) and two covering plates (38U and 38L), said gun body having two opposed through holes (fig. 4 see where 40, 42 attach) and two opposed threaded holes (fig. 4, see where 38U and 38L attach) respectively bored in the opposite sides, said two opposed through holes respectively installed therein with said emitting electric eye and said receiving electric eye, said emitting electric eye and said receiving electric eye connected with a shooting control system (col. 12, lines 28-33), said two covering plates respectively covered around the outer side of said emitting electric eye and said receiving electric eye (see fig. 4); and, said shooting control system unable to carry out shooting of paint pellets when said emitting electric eye emits a light beam and said receiving electric eye receives and induces said light beam (col. 8, lines 45-50), said shooting control system able to carry out pushing and shooting of paint pellets only when the paint pellets are surely moved in the trajectory to obstruct induction of said emitting electric eye and said receiving electric eye (col. 17, lines 27-30). Murdock and Ellis use the optical sensors for the same purpose, to monitor the presence of a blockage in the barrel of the gun and controlling the firing logic to prevent firing until a pellet is seated in the barrel. Therefore, it would have been obvious to one

skilled in the art at the time of invention that the IR emitter/sensor combination as taught by Murdock is the functional equivalent of the sensor as taught by Ellis and therefore the combination is *prima facie* obvious.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ellis in view of Murdock further in view of Heady as applied to claim 1 above, and further in view of Lampman (US 2039009). The Ellis/Murdock combination discloses the invention as discussed above with regard to claim 1, but what the combination does not teach is the use of an o-ring around the optical emitter / sensor. Lampman discloses that the use of "grommets and particularly to resilient ferrules of rubber or other elastic deformable material," was well known in the prior art to "[eliminate] the need for accurately fitted parts." (Col. 1, line 1). Heady provides the motivation to seek out a o-ring or grommet type material to seal the gap around the installation area, as Heady shows that it was recognized in the art to solve the problem of ambient light leaking into optical sensors (col. 3, lines 50-54). Therefore it would have been obvious to one skilled in the art at the time of invention to add an o-ring to the Murdock and Heady combination.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ellis in view of Murdock as applied to claim 2 above, and further in view of Lampman (US 2039009). The Ellis/Murdock combination discloses the invention as discussed above with regard to claim 2, but does not teach is the use of an o-ring around the optical emitter/sensor. Lampman discloses that the use of "grommets and particularly to resilient ferrules of rubber or other elastic deformable material," was well known in the

prior art to "[eliminate] the need for accurately fitted parts." (Col. 1, line 1). Therefore, it would have been obvious to one skilled in the art at the time of invention to combine an o-ring or gasket type material at the optical emitter / sensor area to allow for the close fitting of the emitter with the gun barrel.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In particular, McKendrick '949, Gardner '552, and Williams '386 are listed as examples of paint-pellet guns with optical or other types of sensors attached to the barrel for the prevention of firing the device when a pellet is not completely lodged in the barrel. Murdock et al. (US 6807959) is cited for use of covering plates, IR emitter/receivers and associated gun firing microprocessor. (See attached form PTO-892 for a complete listing of references)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Radi whose telephone number is 571-272-5883. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael J. Carone can be reached on 571-272-6873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

John A. Radi
Patent Examiner
Art Unit 3641

MICHAEL J. CARONE
SUPERVISORY PATENT EXAMINER